

# The Rediscovery of *Strubellia paradoxa* (Strubell)

(Gastropoda : Euthyneura : Acochliidae)

## on the Solomon Islands

BY

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(1 Plate; 3 Text figures)

### INTRODUCTION

IN 1892 A. STRUBELL DISCOVERED two new, small, shell-less gastropod species in a river on the island Amboina and named them *Acochlidium amboinense* and *Acochlidium paradoxum*. Three years later Bergh described a similar fresh water slug: *Hedyle weberi*, which was collected by Weber on the island Flores. Later on Strubell's material was overlooked until it was studied separately by BÜCKING (1933-*Acochlidium amboinense*) and KÜTHE (1935-*Acochlidium paradoxum*, later known as *Strubellia paradoxa*). During an expedition to Sumba in 1949 *Acochlidium weberi* (Bergh's *Hedyle weberi*) was found again as recorded in VAN BENTHEM JUTTING (1955). In 1957 and 1958 *Acochlidium amboinense* was rediscovered by Fehlmann during an ecological study of a river on the Palau Islands (BAYER, F. M. & H. A. FEHLMANN 1960). Finally on his recent expedition in the South Pacific, 1970-1971, Professor Ferdinand Starmühlner from the I. Zoologisches Institut der Universität Wien was able to collect the third known fresh water slug.

I am very grateful to my friend Prof. Starmühlner, who gave the gastropod material, the original photographs and the ecological data to me.

*Strubellia* Odhner, 1937

- Acochlidium* STRUBELL, 1892, Verhandl. naturh. Verein preuss. Rheinlande, 49. Jahrg., Sitzung d. niederrhein. Ges. 13. Juni 1892: 62
- Acochlidium* KÜTHE, 1935, Zool. Jahrb. Syst. 66: 513 - 540
- Strubellia* ODHNER, 1937b, Zool. Anz. 120: 237 - 238
- Strubellia* ODHNER, 1938, Basteria 3: 5 - 11
- Strubellia* ODHNER, 1952, Vie et Milieu 3: 136 - 147
- Strubellia* MARCUS, 1953, Bol. Fac. Fil. Cien. Letr., Zool. 18: 165 - 203
- Strubellia* BOETTGER, 1954, Zool. Anz. (Suppl.) 18: 253 - 280

ODHNER (1937a) found that the name *Hedyle* used by Bergh (*H. weberi*) and by Bücking (*H. = Acochlidium amboinense*) was not a *nomen nudum* and accepted Strubell's name *Acochlidium* for these two generically related species without knowledge of Küthe's study on *Acochlidium paradoxum*. After he had read Küthe's paper, he considered this species as belonging to a new genus and gave it the name *Strubellia* (1937b).

**Diagnosis:** (somewhat modified after ODHNER, 1952): Acochliidae: body 20-30 mm long, labial tentacles and rhinophores cylindrical and of the same length, anterior corners of the foot pointed, spicules absent, inner wall of the midgut gland folded, sexes separated, radula 48-56 transverse rows; only known species: *Strubellia paradoxa* (STRUBELL, 1892).

The material consists of a sample of 25 specimens fixed in Bouin's fluid and preserved in 75% alcohol, all collected from the same locality (No. FSa 2, Matanikau River). The slugs were not anesthetized due to lack of time; therefore, they are very distorted and contracted in the typical way for most Acochliidae by which means the anterior part of the body is more or less withdrawn into the visceral sack. Black and white photographs (Figure 1) and color slides of crawling specimens were taken and show closely the same external morphology and colors as the original drawing of Strubell (KÜTHE 1935, plt. 8, figs. 1 and 2). Three animals were used for preliminary anatomical examination and from 2 others total preparations of the radula, the central nerve ring and the penis were made. Five more specimens were used for histological sections; the study of these and of the nervous system is not yet completed.

It is not of much value to give the measurements of the preserved animals (Figure 2). In any case the larger specimens from the Solomon material stay within the

upper limit Kütke gives for Strubell's material, which is 30 mm; on the other hand the smaller juvenile ones probably were somewhat shorter than 20 mm (Kütke's lower margin) in spite of a calculated 20% shrinkage due to the fixing fluid.

The radula of the newly found specimens shows with one exception no differences from Kütke's description of Strubell's material. The numbers of transverse rows in the two examined specimens are 51 and 48 corresponding to Kütke who described 48 to 56 rows; they also consist of 5 elements. The dorsal part has 35 and 34, the ventral part has 13 and 17 transverse rows.

The exception to Kütke's description of the radula is the shape of the inner lateral plates. They have a similar process to the one Bücking described as "nasenartiger Fortsatz" in *Acochlidium amboinense* and which was re-confirmed and more exactly resketched by BAYER & FEHLMANN (1960:186, fig. 1; pp. 187-188). The process is located on the distal third of the back margin of the plate; its shape is pointed and shows not as blunt a base as the process on the plates of *A. amboinense*, and also, does not show any additional denticles on it as described by Bayer & Fehlmann. The process rather resembles the one on the inner lateral plates of *A. weberi* (BERGH, 1895:8, pl. I, fig. 8, b) although their process is located more to the middle of the back margin. Each process of the newly found material overlaps the following plate and fits into a slight groove on the front margin (Figure 3) as it does

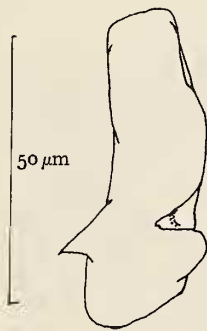


Figure 3

*Strubellia paradoxa* (Strubell)Radula. Inner lateral plate of the left side (scale: 50  $\mu$ m)

in *A. amboinense*. Since the process on the inner lateral plates of *Strubellia paradoxa* appears distinctly only when examined by phase contrast, it seems to be probable that Kütke overlooked it. The outer lateral plates do not bear any denticles.

Due to the fixation of all specimens in Bouin's fluid, the lack of spicules is difficult to prove.

Of the ten examined snails nine were mature and showed a male sexual apparatus; its structure agrees essentially with Kütke's observation, but his drawing (KÜTKE, 1935:523, fig. 5) shows the penis with a 0.5 mm long "Chitinspitze" (chitinous tip of the penis); the penis tip of the specimens from the Solomon Islands is about twice as long (Figure 4).

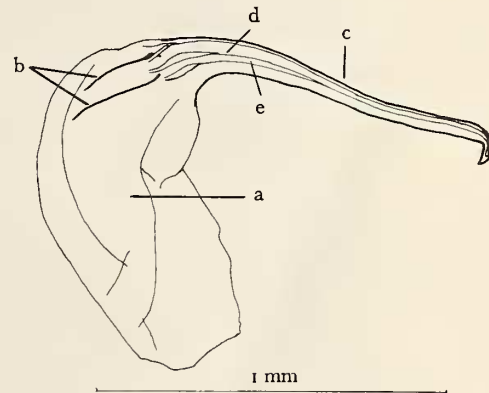


Figure 4

*Strubellia paradoxa* (Strubell)

Penis. Anterior muscle mass (a) with end parts of anterior gland duct (b); chitinous tip of the penis (c) with duct (d) and groove (e) (scale: 1 mm)

**Collecting locality:** Station No. FSa 2; February 15, 1971; Island Guadalcanal of the Solomon Islands (Figure 5), near Honiara, Matanikau River 4.8 km up from its mouth; width of the river 3-5 m, depth 40 cm, current



Figure 5

Guadalcanal, Solomon Islands, Collecting Locality No. FSa 2

50 cm/sec. Water temperature at 11 a.m. 26.2° C; about 5–10 specimens per 625 cm<sup>2</sup> under loose, white limestone rocks with the diameter of 5–10 cm near the river's edge, in the ecological niche of the fresh water triclades (Figure 6); on top of the neighboring rocks: *Neritina*, on the muddy rivers edge: *Melanoides* and some *Tiara*, and in the current: *Septaria*.

Chemical water analysis:

pH .....	7.7
El <sub>20</sub> .....	273
GH .....	8.6°DH (degree of hardness)
SBV .....	3.18 (alkalinity)
SiO <sub>2</sub> .....	26 mg/l
Cl .....	5.39 mg/l
NO <sub>3</sub> .....	0.043 mg/l
P <sub>2</sub> O <sub>5</sub> .....	0.09 mg/l

Further collecting localities:

*Acochlidium amboinense*:

- a) Malaysian Archipelago, Moluccas Islands, Island Ambon (=Amboina), Batu gatja River (STRUBELL, 1892).
- b) Palau Islands, Island Babelthuap, Arakitaoh River, Airai Municipality (BAYER & FEHLMANN, 1960).

*Acochlidium weberi*:

- c) Island Flores, mouth of a river near Bari (BERGH, 1895)
- d) West-Sumba, Kodi, Lai Bondokodi, about 3 km up from the bridge near Kodi (BENTHEM JUTTING, 1955)

*Strubellia paradoxa*:

- e) see a).
- f) Solomon Islands.

The specimens are deposited in the Abteilung für Mollusken, Naturhistorisches Museum, Vienna, Austria, under the catalog No. 78000.

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Explanation of Figures 1, 2, and 6

Figure 1: *Strubellia paradoxa* (Strubell). Crawling animal, approximately 2.5 cm long

Figure 2: *Strubellia paradoxa* (Strubell). Preserved specimen, 4 mm

Figure 6: Matanikau River, near Honiara, Guadalcanal, Solomon Islands. Habitat of *Strubellia paradoxa* (Strubell). Photograph by F. Starnmühlner, 15<sup>th</sup> February, 1971